# SHORELINE RESTORATION PLAN

## Town of Latah
## Shoreline Restoration Plan

June 2013

*Prepared for:*

**Town of Latah**
**City Hall**
PO Box 130
Latah, Washington 99018-0130

*Prepared by:*

**URS Corporation**
111 S.W. Columbia, Suite 1500
Portland, Oregon 97201-5814
URS Project Number 36310146

***Funded by Washington State Department of Ecology Grant No. G1200041***

# TABLE OF CONTENTS

# TABLE OF CONTENTS

## Tables



## Figures

# Acronyms

| | |
|---|---|
| **ALEA** | Aquatic Lands Enhancement Account |
| **BMP** | Best Management Practice |
| **DNR** | Washington Department of Natural Resources |
| **Ecology** | Washington Department of Ecology |
| **EQIP** | Environmental Quality Incentives Program |
| **GIS** | Geographical Information Systems |
| **HPA** | Hydraulic Project Approval |
| **INLT** | Inland Northwest Land Trust |
| **IPM** | Integrated Pest Management |
| **LIP** | Landowner Incentive Program |
| **LWD** | Large Woody Debris |
| **NRCS** | Natural Resources Conservation Service |
| **NPCC** | Northwest Power and Conservation Council |
| **NWI** | National Wetland Inventory |
| **OHWL** | Ordinary High Water Line |
| **REI** | Recreational Equipment Incorporated |
| **ROW** | Right-of-Way |
| **SCD** | Spokane Conservation District |
| **SMA** | Shoreline Management Act |
| **SMP** | Shoreline Master Program |
| **SSP** | Spokane Subbasin Plan |
| **TMDL** | Total Maximum Daily Load |
| **WAC** | Washington Administrative Code |
| **WCC** | Washington Conservation Corps |
| **WDFW** | Washington Department of Fish and Wildlife |
| **WRIA** | Water Resource Inventory Area |

## 1.1 OVERVIEW

Under the Washington State Shoreline Management Act (SMA), each city and county with "shorelines of the state" must adopt a Shoreline Master Program (SMP) based on state laws and rules but tailored to the specific geographic, economic, and environmental needs of the community. A primary goal of an SMP, per Washington Administrative Code (WAC) 173-26-186(8), is to achieve "no net loss of ecological shoreline functions necessary to sustain shoreline natural resources." Considering that SMPs are also intended to provide public access and shoreline-dependent development, it can be difficult to maintain the current state of shoreline ecological functions while allowing for new shoreline development and other shoreline uses, such as recreation, that can affect those shoreline functions.

Even with regulations that prevent rampant, uncoordinated development of the State's shorelines, new developments, increased recreational use, and other uses have the potential to result in a net loss of shoreline ecological functions over the foreseeable 20-year SMP planning period. This shoreline restoration plan describes actions that have the potential to increase shoreline ecological functions. As such, it provides a means for the SMP to compensate for future shoreline habitat degradation. Incorporating shoreline restoration planning into the SMP process allows the Town of Latah (Latah) to balance anticipated shoreline habitat degradation and enhancement in a manner that can maintain the overall ecological condition of its shorelines, thereby meeting the no net loss goal.

Within the incorporated boundaries of Latah, only Hangman Creek shorelines meet the definition of "Shorelines of Statewide Significance." Under the SMA, all lands within 200 horizontal feet of Hangman Creek's ordinary high water line (OHWL) are covered under jurisdiction of this SMP.

Preparation of an SMP involves several elements. The process begins by establishing the shoreline jurisdiction and then conducting a baseline inventory of regulated shoreline areas. This information is then analyzed and characterized in a report, which is used to direct development of shoreline environmental designations and associated shoreline policies and regulations. The inventory also establishes the baseline for shoreline ecological functions. The baseline characterization of shoreline ecological functions for Latah are documented in reports titled *Spokane County Shorelines Master Program Update* (Landau Associates 2005) and *Spokane County Proper Functioning Condition Stream Inventory and Assessment* (SCD 2005) and summarized in the *Shoreline Inventory and Characterization Summary Report, Towns of Latah, Waverly, and Rockford* (URS 2012). These reports establish the baseline that is measured against when determining whether or not a new SMP will meet the goal of no net loss of shoreline ecological functions.

This restoration plan establishes overall goals and objectives for town-wide shoreline restoration efforts. It evaluates degraded areas and impaired ecological functions identified in Latah by the shoreline inventory and characterization reports. Based on these, it identifies and prioritizes restoration opportunities and prescribes generalized treatment options for various restoration scenarios. This plan identifies current and ongoing programs that contribute to achieving these goals, as well as additional projects or programs necessary for success. Lastly, this plan seeks to develop a draft implementation strategy, including funding options, proposed timelines, an

adaptive management strategy, and benchmarks. The plan is based on the inventory and analysis report and a review of other plans and assessments aimed at improving the ecological health of Hangman Creek.

The term "restoration" has many definitions, both scientific and regulatory. For the purpose of this plan, restoration is defined as:

> *The reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.* (WAC 173-26-020(27))

Under the SMP, Latah's role in shoreline restoration includes collaborative planning, regulating, preserving high quality shoreline areas, and aiding community efforts to restore degraded portions of Latah's shorelines.

A well-designed restoration plan can help local governments meet the "no net loss" standard of the SMP Guidelines. Restoration planning must, therefore, include some form of monitoring to ensure that intended restoration actions are offsetting the expected loss of function that will occur from incremental impacts sustained over time (Ecology 2010a).

## 1.2 CONTEXT FOR THE TOWN OF LATAH

Latah contains a relatively small area of shoreline jurisdiction and, as a small town, has few resources available for implementing and monitoring a shoreline restoration program. It is expected that compensation for the degradation of shoreline functions associated with any future developments would be achieved through mitigation requirements associated with Shoreline Substantial Development regulations.

However, this plan provides an additional tool to offset increased land use pressures. By implementing the restoration actions described in this plan, Latah can be more assured of meeting the goal of "no net loss of shoreline ecological functions." This restoration plan is focused on identifying restoration opportunities, ranking those opportunities, and identifying partnerships, planning elements, and grant options to implement those opportunities.

## 1.3 EXISTING SHORELINE CONDITIONS

Latah is located primarily along the eastern banks of Hangman Creek at river mile 47. All of the property within the town's SMP jurisdiction is private except for a small area of road right-of-way (ROW) east of the Spring Valley road bridge. The town contains 18.12 acres within the SMP jurisdiction. Tax parcels generally include the creek (Figure 1). Land uses noted in the tax parcel database include agricultural, commercial, residential, and vacant. Lands noted as having a "vacant" land use are associated with the former Union Pacific Railroad tracks.

Cove Creek enters Hangman Creek just south (upstream) of the town's municipal boundary. North of Cove Creek, the town's shoreline jurisdiction includes a farmed grass field. The National Wetland Inventory (NWI) maps a linear wetland in this field. North of the grass farm, the shoreline zone contains a 4-acre cottonwood forest, which is mapped as wetland by the NWI.

Both wetlands are also mapped as Priority Habitats by the Washington Department of Fish and Wildlife (WDFW). These wetland boundaries appear to be within the 200-foot buffer of the creek. Between the cottonwood forest and the Spring Valley Road stream crossing to the north, the land use returns to farmed grassland.

North of Spring Valley Road, the town's boundary extends across Hangman Creek to include the west bank, which is used for goat pasture. The streambanks below the pasture appear unstable. They are weakly stabilized by reed canarygrass and erosion was noted during a field visit conducted by URS and JUB in September 2012. According to a local resident[1], when the creek floods, a portion of the goat pasture is occasionally under water. The west bank of the creek appears to be a good location for woody shrub plantings that would stabilize the banks (reduce erosion), prevent goats from falling into the river, and provide some shade for the creek, which is Total Maximum Daily Load (TMDL)-listed for temperature.

North of the bridge, the east bank of the creek contains Latah's commercial/industrial area. Here the streambank is armored and a berm has been constructed to protect this developed area from occasional flooding. This appears to be effective according to Mr. Parks, who indicated that the area has not flooded in recent years. The commercial/industrial area is actively used and includes recent construction associated with business expansion.

## 1.4 SUMMARY OF LIMITING FACTORS

Limiting factors are environmental variables whose presence, absence, or abundance restricts the distribution, numbers, or condition of one or more organisms (Webster 2007). These factors impair ecosystem processes and limit the capacity of ecological functions. Restoration activities should be developed to address the cause of these limiting factors, where possible. Table 1 provides a summary of limiting factors for the Hangman Creek shoreline ecosystems in Latah, based on shoreline observations and existing natural resource assessments and watershed plans.

[1] Conversation with Doug Parks, Town of Latah council member, longtime resident.

**Table 1. Summary of Factors Limiting the Proper Functioning Condition of Hangman Creek in the Town of Latah, WA**

| Limiting factor | Assumed cause(s) |
|---|---|
| High summer water temperature | Lack of riparian tree cover, low/restricted flows |
| Lack of riparian cover | Adjacent land management (transportation/utility corridor right-of-way [ROW] maintenance), pedestrian degradation, non-native species establishment, urban land use (turf, concrete, etc.) |
| High turbidity (303(d)) | Agricultural operations, unpaved roads, stormwater runoff |
| Fecal coliform (303(d)) | Improperly functioning septic systems; livestock, wildlife, stormwater runoff, and upstream regional influences |
| Low dissolved oxygen (303(d)) | Eutrophication due to high nutrient inputs from fertilizer in stormwater runoff, upstream agriculture, and livestock; low flow in slack water portions of river |
| Presence/spread of noxious vegetation that displaces higher functioning native habitat | Prior introductions, upstream seed sources, funding insufficient to treat cause or contain existing populations |

Restoration activities to address these limiting factors could include the following:

- implementing agricultural best management practices (BMPs) to reduce erosion
- enhancing and restoring riparian buffers
- managing livestock to prevent their waste from reaching streams
- maintaining septic systems to avoid leakage
- completing streambank restoration projects, including plant installations
- educating residents about water quality issues and the activities to address them

## 1.5 REQUIRED ELEMENTS OF RESTORATION PLANNING FOR SMP UPDATES

The state guidelines (WAC 173-26-201(2)(f)) provide six necessary elements for a complete shoreline restoration plan. These elements are summarized in Table 2 with reference to the section of this report in which that element is addressed.

**Table 2. Required Elements of Restoration Planning for SMP Updates**

| Shoreline Restoration Plan Elements for SMP Updates | Section in this Report |
|---|---|
| Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration. | Section 1.4: Summary of Limiting Factors<br>-and-<br>Section 5: Restoration Opportunities |
| Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions. | Section 2: Restoration Goals and Supporting Policies<br>-and-<br>Section 4: Prioritization Methodology |
| Identify existing and ongoing projects and programs currently being implemented that are designed to contribute to local restoration goals. | Section 3.1: Existing and Ongoing Projects and Programs |
| Identify additional projects and programs needed to achieve local restoration goals and implementation strategies, including identifying prospective funding sources for those projects and programs. | Section 3.2: Additional Projects and Programs Needed to Achieve Shoreline Restoration Goals<br>-and-<br>Section 6: Implementation Plan |
| Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals. | Section 6: Implementation Plan |
| Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals (e.g., monitoring of restoration project sites). | Section 7: Monitoring and Maintenance |

The goal and policies of this plan direct the course of Latah's shoreline restoration efforts. This plan's goal and policies are intended to support SMP Goal No. 7 for Conservation: *Preserve for the future those natural resources, including the unique, fragile and scenic qualities of the shoreline, which cannot be replaced. Achieve no net loss of ecological functions of the shoreline.*

**Restoration Goal:** **Restore native habitats or natural processes, where degraded, to improve shoreline ecological functions.**

**Restoration Plan Policy 1:** *Summarize degraded shoreline areas and functions documented by previous assessments.*

This plan documents areas identified as restoration opportunities by the *Spokane County Shorelines Master Program Update* (Landau Associates 2005) and the *Spokane County Proper Functioning Condition Stream Inventory and Assessment* (SCD 2005) and summarized in the *Shoreline Inventory and Characterization Summary Report* (URS 2012). For each restoration opportunity identified in these reports, the plan documents the apparent impairment (cause of degradation to shoreline ecological functions) and a conceptual restoration approach.

**Restoration Plan Policy 2:** *Prioritize restoration opportunities to identify projects with greatest benefit to shoreline areas.*

In order to most effectively proceed with restoration efforts, this plan prioritizes restoration opportunities in terms of overall benefit to the waterway. Restoration priorities are based on an assessment of limiting factors (as summarized in Section 3.1), in combination with the ease of project implementation (e.g., on public land) and project size. Prioritization methods are described in Section 4.

**Restoration Plan Policy 3:** *Establish an implementation strategy.*

As directed by WAC 173-26-201(2)(f)(iii-iv), an adequate restoration plan must identify potential restoration partners, potential funding mechanisms, timelines, and benchmarks. Together, these elements comprise an implementation strategy. This plan includes these elements and organizes them to facilitate a workable implementation strategy.

**Restoration Plan Policy 4:** *Identify existing and prospective projects and programs that are contributing or likely to contribute towards local shoreline restoration efforts.*

An assortment of existing projects and programs are in effect to support shoreline restoration efforts. Some are located within Latah while others are regional. This plan includes an assessment of the existing project and programs to determine where gaps exist with regard to achieving the goal of this plan. This plan then describes additional projects and/or programs that have the potential to fill in those gaps.

**Restoration Plan Policy 5:** *Work with public and private partners to encourage restoration and enhancement of Latah's shoreline areas.*

Latah will work to establish partnerships with public and private groups on specific restoration projects and/or programs, as funding allows.

**Restoration Plan Policy 6:** *Monitor success of restoration activities and adapt strategies based on monitoring results.*

This plan establishes a monitoring protocol to evaluate the effectiveness of Latah's efforts to implement the restoration plan and meet the overall restoration goal. Monitoring data may be used to identify successful project designs that serve as examples for future restoration projects. In addition, where monitoring data documents a failed design, the data will be used to modify the strategy for subsequent restoration design projects.

This section identifies existing ongoing projects and programs that are contributing or likely to contribute towards local shoreline restoration efforts. It also identifies additional projects and programs that, in combination with existing projects and programs, would meet the goals of this plan and address the limiting factors described in Section 1.4.

## 3.1 EXISTING AND ONGOING PROJECTS AND PROGRAMS

The following agencies provide funding and resources for stream and terrestrial shoreline habitat restoration projects. They are described in order from federal, to state, to local organizations.

### 3.1.1 Northwest Power and Conservation Council/BPA

The Spokane Subbasin Plan (SSP), contained within the larger Intermountain Subbasin Plan, was prepared by GEI Consultants Inc. for the Northwest Power and Conservation Council (NPCC) in 2004 (GEI Consultants Inc. 2004). The NPCC is responsible for developing a fish and wildlife program to protect, mitigate, and enhance fish and wildlife affected by hydroelectric development in the Columbia River Basin, and making annual funding recommendations to the Bonneville Power Administration for projects to implement the program. The SSP evaluates the health of the major water bodies included within the Spokane Subbasin, including Hangman Creek. The SSP provides objectives and strategies for effectively managing priority fish species within the Spokane Subbasin.

### 3.1.2 National Resource Conservation Service

The National Resource Conservation Service (NRCS) regularly works with private landowners to protect water quality by offering advice and incentives for habitat preservation and restoration. The NRCS field offices in Colfax and Spokane work with land owners in the Palouse region. All of the following programs offered by the NRCS may be used to help enhance or restore shoreline ecological functions:

- Watershed Conservation/Habitat Restoration Program
- Environmental Quality Incentives Program (EQIP)
- Wetlands Reserve Plant Materials Program
- Wildlife Habitat Incentives Program
- Watershed Program

### 3.1.3 Washington State Department of Fish and Wildlife

The WDFW is an agency that works to monitor and maintain the health of the state's fish and wildlife populations. The agency has a regulatory role through its hunting and fishing licensing program and its Hydraulic Project Approval (HPA) permit program. The agency also maintains mapping data to document the location and extent of rare species and sensitive habitats. Money generated through its permit programs is used to fund the following programs, which may incentivize shoreline restoration activities:

- Hydraulic Mitigation Fund
- Aquatic Lands Enhancement Account
- Backyard Wildlife Sanctuary Program
- Landowner Incentive Program (LIP)
- Watershed Stewardship Program

### 3.1.4 Washington State Department of Natural Resources

The Washington State Department of Natural Resources (DNR) is the steward of Washington State's natural resources, including state-owned aquatic lands. As part of its stewardship, the agency has implemented an Aquatic Restoration Program that works to restore, enhance, create, and protect healthy ecological conditions in aquatic systems through partnerships with agencies and organizations.

### 3.1.5 Washington State Department of Ecology

The Eastern Region of the Washington State Department of Ecology (Ecology) is involved in maintaining water quality for the Hangman Creek Watershed (Water Resource Inventory Area No. 56). The primary driver for this work is Ecology's role in overseeing the Hangman Creek Water Quality Improvement Project. Hangman Creek does not meet Washington State's water quality standards for several reasons, including fecal coliform, high temperature, and excessive turbidity. Poor water quality is attributed to agriculture, stormwater from impervious surfaces, timber harvests, and other land uses that may generate erosion or pollution. To address water quality issues within the Washington portion of the watershed, Ecology worked with the Spokane Conservation District (SCD) on a project called a Total Maximum Daily Load (TMDL). After establishing the TMDL, which sets limits and targets for water quality, Ecology worked with the SCD and several other agencies and organizations to develop a water quality implementation plan. This plan identifies key projects that will improve water quality within the watershed, which should help improve water quality in Latah.

Ecology also provides financial assistance for water quality improvement projects through its Centennial Grant Program, Clean Water Act Section 319 Grant Program, and the Clean Water State Revolving Fund Loan Program. These grant programs can be used to help fund stream and riparian restoration projects, as well as clean water infrastructure projects, such as wastewater treatment facilities.

### 3.1.6 Spokane Conservation District

The SCD provides technical assistance and tools to help landowners manage and protect land and water resources throughout Spokane County. The SCD has been involved in county-wide shoreline assessment to assist with SMP updates. The district has developed the Hangman Creek Water Resource Management Plan, in cooperation with Ecology, to develop a water balance for the watershed, establish public information and awareness of issues in the watershed, and establish future management guidelines. The SCD also provides a variety of programs to incentivize natural resource conservation and restoration on private lands. Such programs include the following:

- Agricultural Program
- Septic Replacement Program
- Livestock and Land Program
- Cost-Share Programs
- Conservation Futures Program
- Backyard Conservation Program
- Water, Wetlands, Ponds Program
- Stewardship Incentive Program

## 3.2 ADDITIONAL PROJECTS AND PROGRAMS NEEDED TO ACHIEVE SHORELINE RESTORATION GOALS

The following proposed additional projects and programs may augment the existing, ongoing projects and programs in a manner that addresses the limiting factors and, thereby, meets the shoreline restoration goal described in Section 2.1:

- Encourage landowners along the shoreline to inquire with the SCD Water Resources Department for advice on restoration or conservation incentives in shoreline areas.
- Coordinate with WDFW to direct wildlife mitigation funds towards shoreline enhancement projects within Latah and/or develop habitat enhancement strategies to offset impacts associated with proposed projects in shoreline areas.
- Incorporate shoreline restoration into proposed capital improvement projects located in shoreline areas.

Capital improvement projects, such as future sewer treatment facilities and bridges, have the potential to be planned and funded so as to include an element of shoreline restoration. When discussing justification for the spending of tax dollars on shoreline restoration elements of future capital improvement projects, this plan may be referenced as it describes the role of shoreline restoration under the SMP.

Landowners in Latah may be able to access funding for the development and implementation of management practices to protect water quality and reduce soil erosion. Conservation practices allow agricultural producers and landowners to maintain the economic viability of their property. These practices will also help protect soil, air, and water, while improving habitat for fish and wildlife.

The prioritization methodology described in this plan was created specifically for the shoreline conditions along Hangman Creek in Latah. Prioritization of restoration areas was based on five factors that are simple to measure and greatly influence the value of shoreline enhancements. Geographical Information Systems (GIS) technology was utilized to measure and score each site. Each site is scored on a scale of 1 to 5 for each of the five factors. The sum of the scores for these five factors provided an overall priority score for each site. This score illuminates restoration opportunities that are both practical to develop and result in the greatest benefit to shoreline functions. Table 3 provides a summary of the scoring criteria used to prioritize restoration areas.

**Table 3. Restoration Priority Scoring Criteria**

| Factor | Measurement | Scoring Criteria |
|---|---|---|
| Ease of property acquisition/access | Ownership | Public (5) or private (1) |
| Shade benefit (thermoregulation) | Aspect along stream corridor (for planting of woody vegetation) | South bank (5), west bank (3), east bank (2), or north bank (1). Sites with more than one aspect receive the highest aspect score. Sites that would not produce shade are scored as 0. |
| Scale of restoration activity | Size (acreage) | Area ≥ 2 acres (5), ≥ 1 but < 2 acres (3), ≥ 0.5 but < 1 acre (2), and area smaller than 0.5 acres (1) |
| Role within context of surrounding habitat matrix | Habitat connectivity | Creates or fills gaps in wildlife habitat corridor (continuous woody vegetation cover) to produce a corridor that is greater than 1,000 linear feet (5), 500 to 999 linear feet (3), 100 to 499 linear feet (2), or under 100 linear feet (1). Restoration opportunities that would not create shade within 100 feet of the shoreline are not applicable and receive a score of 0. |
| Consistency with other SMP goals | Supports at least one other SMP goal | For shoreline restoration actions that have the additional merit of supporting other SMP goals, such as flood hazard reduction or safe public access, those actions will receive a score of 5 for this factor. |

The priority scores are ranked from highest to lowest in Table 4 of this report.

## 5.1 SITE-SPECIFIC RESTORATION OPPORTUNITIES

The following site-specific opportunities draw directly from physical shoreline assessments that identified sites where degraded conditions could be restored to a properly functioning condition. These are *opportunities* for shoreline restoration for Latah's consideration as the plan is implemented. As restoration opportunities identified in this plan are voluntary and subject to available funding, Latah is not obligated to implement these opportunities directly. However, Latah should reference these projects when reviewing shoreline development proposals or discussing shoreline projects with public agencies or interested volunteer groups. Where possible, Latah should attempt to incorporate shoreline restoration into prospective projects and track such progress, to document compliance with the shoreline restoration element of the SMP.

Table 4 summarizes the site-specific restoration opportunities that were identified during detailed stream assessments in 2010 as well as during site visits in 2012. For each opportunity, the cause of degradation (impairment), functions affected, conceptual restoration strategy, and restoration priority are provided. Restoration opportunities are arranged by their priority score and can be seen on Figure 1.

**Table 4. Shoreline Restoration Opportunities for Hangman Creek in the Town of Latah**

| Site Priority Score | Site ID | Impairment | Conceptual Restoration Approach | Acres | Public |
|---|---|---|---|---|---|
| 11 | L3* | Noxious weeds, no shade, low native plant diversity, stormwater runoff, agricultural operations | Plant woody riparian species, contain/detain stormwater runoff from Hwy 27 and railroad, fence out/exclude agricultural plowing and planting within shoreline area, weed control, and manage/minimize livestock grazing on east bank. | 1.09 | No |
| 11 | L1 | Noxious weeds, no shade, bank erosion, low native plant diversity | Plant woody riparian species, weed control, stabilize bank, and fence out livestock from west bank. | 0.67 | No |
| 7 | L2 | Noxious weeds, no shade, low native plant diversity, stormwater runoff | Control reed canarygrass and noxious weeds, plant woody riparian species, and contain/detain stormwater runoff from Hwy 27 and railroad on east bank. | 0.23 | No |

* Opportunity L3 extends beyond the Latah town limits to Cove Creek; however, the proposed planting area is within the same tax parcel.

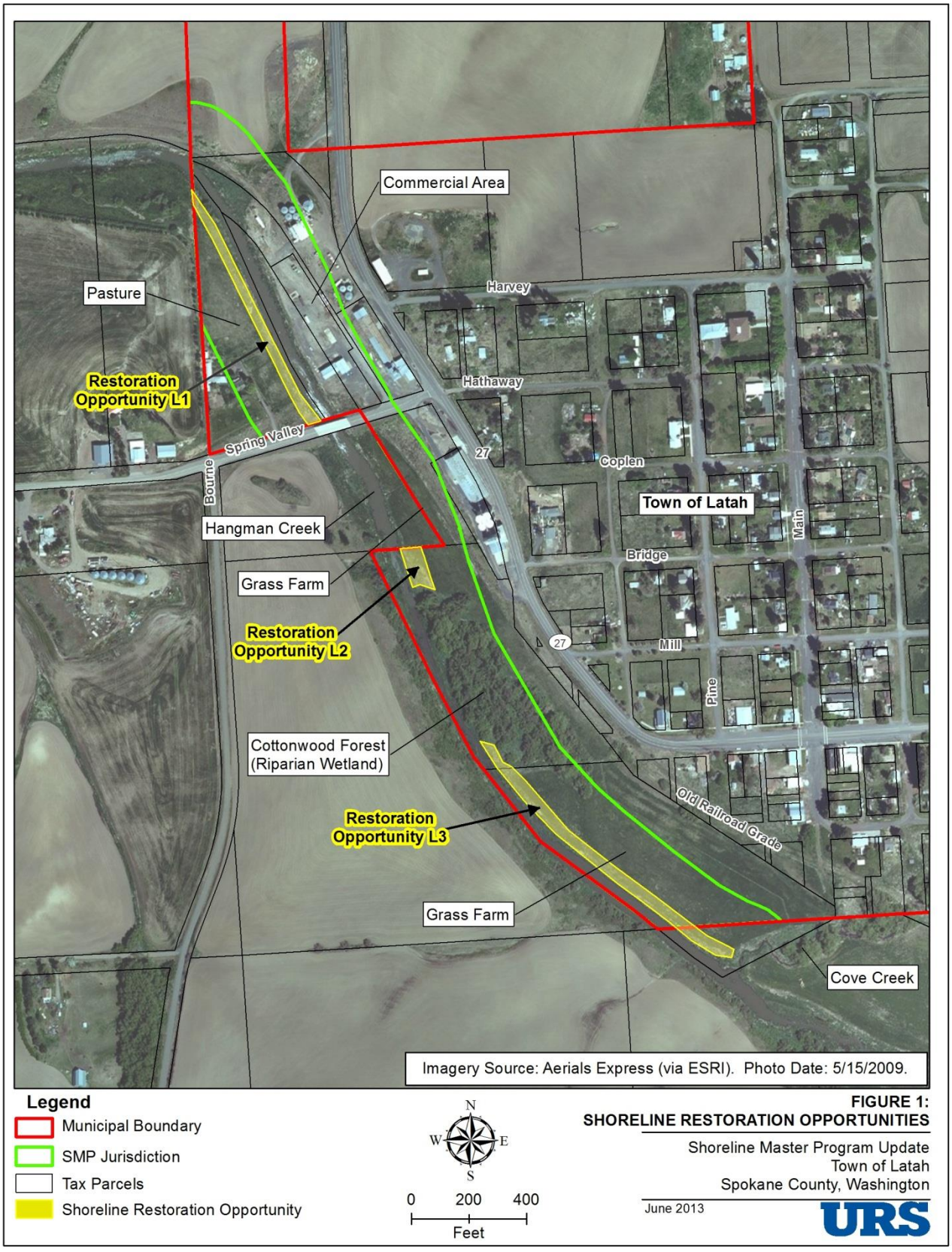


**FIGURE 1:**
**SHORELINE RESTORATION OPPORTUNITIES**

Shoreline Master Program Update
Town of Latah
Spokane County, Washington

June 2013

URS

## 5.2 CONCEPTUAL RESTORATION APPROACHES

Restoration opportunities listed in Table 4 of this plan include conceptual restoration approaches. These approaches address the specific impairments at each restoration opportunity site. Where possible, they attempt to address the cause of the impairment to achieve long-term gains in shoreline ecological functions. The majority of the recommended restoration approaches have to do with riparian forest or scrub-shrub plantings—these types of restoration projects tend to provide multiple ecological benefits that enhance various shoreline functions. Thus, riparian plantings tend to provide the greatest return on investment along Hangman Creek, considering the options available to Latah.

This section provides generalized restoration information associated with the conceptual approaches noted in Table 4 to aid in developing site specific restoration plans. For example, plantings within areas of active river flow tend to require greater planning; these areas often require additional restoration factors to ensure that plantings are not washed out with the first high water of the season. Riparian planting projects located above the area of seasonally high water are generally much simpler to establish.

### 5.2.1 Riparian Plantings

Native riparian plantings almost always enhance quality of riparian habitats. The quality of riparian habitat promotes several beneficial functions to both the terrestrial and aquatic habitat components. These include pollutant filtering, wildlife habitat (cover, food, roosting), habitat connectivity, shading/temperature control of water, and input of organic matter (e.g., leaf litter) that provides food web support to aquatic species, including support for benthic invertebrates (Covitch et. al. 1999). Benthic invertebrates, or insects that live in the river soils, are a primary food source for native fish (Ecology 2005).

Planning for riparian planting projects must address the physical and ecological site conditions such as soil stability, moisture availability, and aspect (amount of sun). Successful riparian plantings require appropriate species selection for a given set of local site conditions. Some species are found more commonly on the north, dry banks of Hangman Creek, while others prefer the less-exposed southern banks. Certain species grow near the river edge while others prefer the elevations slightly above the water but where roots can reach the seasonally low water table. For these reasons, a qualified ecologist with riparian planting experience should assist with developing planting plans for specific areas whenever possible. The following riparian species represent a good starting point for a restoration project planting list along Hangman Creek:

**Table 5: Native Species Suitable for Shoreline Restoration**

| Scientific Name | Common Name | Type |
|---|---|---|
| *Acer glabrum* | Rocky Mountain maple | Tree |
| *Alnus tenuifolia* | Thinleaf alder | Tree/Shrub |
| *Pinus ponderosa* | Ponderosa pine | Tree |
| *Populus balsamifera ssp. Trichocarpa* | Black cottonwood | Tree |
| *Populus tremuloides* | Quaking aspen | Tree |
| | | |
| *Crataegus douglasii* | Black Hawthorne | Shrub |
| *Physocarpus malvaceus* | Mallow ninebark | Shrub |
| *Ribes aureum* | Golden currant | Shrub |

| Scientific Name | Common Name | Type |
|---|---|---|
| *Rosa woodzii* | Woods rose | Shrub |
| *Salix exigua* | Coyote willow | Shrub |
| *Salix lasiandra* | Pacific willow | Shrub |
| *Salix rigida var. mackenzieana* | Mackenzie willow | Shrub |
| *Symphoricarpos albus* | Snowberry | Shrub |
| | | |
| *Agropyron spicatum* | *Bluebunch wheatgrass* | Grass |
| *Festuca idahoensis* | *Idaha fescue* | Grass |
| *Koeleria cristata* | *Junegrass* | Grass |
| *Bromus carinatus* | *Mountain brome* | Grass |
| *Poa sandberii* | *Sandberg bluegrass* | Grass |
| *Sitanion hystrix* | *Squirrel-tail grass* | Grass |

### 5.2.2 Streambank Stabilization

Streambanks often become unstable as a result of natural forces, such as increased water velocity. Where vegetation is present, the water scour energy is dissipated by the vegetation and the soils are bound by the roots, thus resulting in less erosion. However, where vegetation is absent or degraded, often in association with pedestrian foot traffic or historical clearing, soils become less stable and prone to erosion. Erosion, although a natural process, can be detrimental to aquatic organisms when the amount of loose sediments in the river (turbidity) exceeds low densities. In addition to protecting human infrastructure, streambank stabilization reduces the potential for shoreline erosion.

Depending on site-specific conditions, one or more actions may be appropriate to stabilize an eroding shoreline area. Riparian plantings contribute greatly to bank stabilization by binding soil in roots and acting as a buffer to water velocity and abrasive materials transported in water. Based on existing streambank conditions, stabilization may also require engineering techniques such as slope set-back, terracing, soil wraps, or placement of large woody debris (LWD), to promote long-term stability.

Streambank stabilization often involves bioengineering: the use of both engineering materials and biological materials that can grow within an engineered structure to provide structural support as well as habitat and shade functions. Examples include large rock and soil wrapped in geotextile fabric and secured with willow stakes. Streambank bioengineering in low precipitation areas often includes live-stake plantings, brush or tree revetments, erosion control straw blankets, and willow fascines (Hoag and Fripp 2002).

In certain situations, more durability is needed to secure banks against high water velocity, to protect property and stabilize eroding riparian habitat. Hard devices such as rip-rap should be specifically sized and configured to the situation by a qualified person or team. Where possible, they should incorporate plantings. Geotechnical and hydraulic considerations are important to assess on a site-specific basis.

### 5.2.3 Noxious Weed Control

Noxious weed control is an essential component of riparian vegetation maintenance and restoration. Native vegetation, in many areas throughout Latah, has the potential to re-establish through passive

means (i.e., by itself) but competition from non-native and noxious vegetation in many areas is sufficient to prevent its successful growth.

The installation of native vegetation in areas where weeds are prevalent requires careful site preparation and noxious weed maintenance. Given realistic constraints on long-term site maintenance, the best opportunity to control weeds is to select plants to install that can compete against the weed(s), and in the best case scenario outcompete (i.e., shade out) weeds. The goal should be to establish a "weed-resistant" plant community to the extent possible. The use of herbicides may be warranted in areas dominated by high densities of noxious weeds, namely tansy (*Tanacetum vulgare*). An Integrated Pest Management (IPM) approach to establishing favorable conditions for native plants and controlling invasive plants should be used. Several references are available on weed control, and specialists with the County Noxious Weed Control Board are very knowledgeable of current control strategies.

### 5.2.4 Contain Stormwater Runoff

Stormwater runoff impairs local streams in several ways. In urban areas, stormwater transports nutrients from fertilized yards, pollutants from roads and parking lots, and bacteria from pet wastes. Urban runoff, which travels along sun-warmed asphalt roads and other impervious surfaces, also delivers warm water to streams. Rural stormwater transports nutrients from agricultural fertilizer, bacteria from livestock and wildlife, and sediments from plowed fields. Stormwater runoff also causes local creeks to become more "flashy." A storm event causes a flashy creek to quickly flood, increase velocity, and overtop and erode its banks.

Stormwater runoff is a non-point source problem, and effective solutions involve outreach and education to local land owners (both inside and outside shoreline areas) about the issue. Incentives (e.g., cash, reduced stormwater fees, labor, technical support) can also be offered to encourage land owners to contain their stormwater on site.

Stormwater may be treated within the shoreline restoration areas, but would likely be less effective than small, decentralized treatments upslope. Bioswales and strawbales may be placed at culvert inlets and outlets to slow and filter stormwater before it enters the creek; however, this treatment method often requires frequent, ongoing maintenance and would not be an effective long-term solution.

This section addresses an implementation framework for Latah's shoreline restoration planning as per WAC 173-26-201 (2)(f)(vi). An implementation plan must include identified partners, potential funding sources, timelines, and benchmarks.

## 6.1 POTENTIAL RESTORATION PARTNERS

The following organizations have demonstrated an interest in shoreline protection or restoration in the vicinity of Latah (Table 5). These organizations may be contacted when seeking partners for restoration project funding, construction, and/or maintenance and monitoring.

**Table 6: Existing Partnership Opportunities**

| Organization | Summary |
|---|---|
| **Washington Conservation Corps (WCC)** | The WCC is an affiliate of the AmeriCorps program administered by Ecology. The WCC provides members the opportunity to develop skills in environmental restoration, trail work, environmental education, and disaster response. |
| **Inland Northwest Land Trust (INLT)** | INLT is a local, non-profit, non-political organization with over 450 members. Through easements, acquisitions, and by working with other conservation partners, INLT works to preserve wetlands, shorelines, farmlands, and forests in eastern Washington and northern Idaho. |
| **Local Academia** | Three nearby colleges have biology programs that include riparian ecology studies. By coordinating with biology professors, Latah may be able to create mutually beneficial relationships with their biology studies, particularly with graduate students studying riparian ecology. Gonzaga and Whitworth College have undergraduate biology programs. Eastern Washington University and Washington State University offer undergraduate and graduate degrees in environmental and Natural Resource Sciences. |
| **Sierra Club Upper Columbia River Group** | The Sierra Club is a non-profit volunteer organization that has been working to protect the natural environment and communities. The club is one of the largest and most influential grassroots environmental organizations in the United States. |
| **Spokane Audubon Society** | The mission of the Spokane Audubon Society is to provide services to the Spokane region that allow natural ecosystems to become more healthy, thriving, and restorative, to nurture and protect birds and other wildlife and their habitats, and to encourage biological diversity for the benefit of people and nature in the Spokane region and the world. |
| **Spokane Canoe and Kayak Club** | The Spokane Canoe and Kayak Club is an organization of individuals who are enthusiastic about human-powered watercraft. In recent years the club has participated in joint habitat restoration projects on the Spokane River. |
| **Spokane Conservation District (SCD)** | The Washington Conservation District Law (RCW 89.08) describes the responsibilities and purpose of conservation districts, which include<br>•conducting education and demonstration projects;<br>•carrying out improvements to conserve natural resources;<br>•cooperating or entering into agreements with others, including other districts; and<br>•making equipment and materials available to landowners to assist them in conserving natural resources. |

| Organization | Summary |
|---|---|
| | The mission of the SCD is to promote the sustainable use of natural resources within Spokane County. The district provides information on their available programs and services, as well as potential funding sources from outside agencies. |
| **The Lands Council** | The Lands Council is a Spokane-area grassroots, non-profit organization dedicated to protecting the quality of life in the Inland Northwest. The Lands Council has protected thousands of acres of public land, and in the process worked to preserve forests, water, and wildlife. |
| **Trout Unlimited, Spokane Falls Chapter** | The mission of Trout Unlimited is to conserve, protect, and restore cold water fisheries, their watersheds, and ecosystems as a means of maintaining our quality of life.<br><br>The Spokane Falls Chapter of Trout Unlimited does this by promoting effective fish management decisions, and by taking an active part in habitat restoration and fish production projects. |
| **Veterans Conservation Corps** | The mission of the Veterans Conservation Corps is to assist veterans by providing training and volunteer opportunities that help to restore and protect Washington state's natural resources. Volunteer and internship opportunities include:<br><br>•stream restoration and monitoring;<br>•revegetation of native plants;<br>•restoration of watersheds, forests, prairies or native grasslands;<br>•environmental or community education; and<br>•other protection or restoration activities. |
| **WDFW's Habitat Program, Restoration Division** | The Restoration Division leads WDFW's efforts to restore and protect aquatic ecosystems by providing scientific, engineering, and planning expertise through cooperative partnerships. The division's focus areas include:<br><br>• providing near shore ecosystem assessment, strategic planning, and funding assistance to local communities;<br>• identifying and prioritizing needed projects to remove fish passage barriers;<br>• providing training and guidance to local restoration project proponents to help communities inventory fish passage and successfully restore habitat; and<br>• supporting aquatic habitat restoration by providing environmental engineering review, design, and technical guidance to public and private landowners and restoration entities. |

In addition to the partnership opportunities listed above, many others are likely. For example, local schools may be interested in supporting shoreline restoration projects.

## 6.2 POTENTIAL SOURCES OF FUNDING

There are several sources of potential funding available to Latah and potential restoration partners for shoreline restoration projects. This section summarizes the most likely and available funding sources.

**Environmental Protection Agency:**

- Five-Star Restoration Program - This grant funds community-based wetland restoration having a strong "on-the-ground" component, with long-term ecological, educational, and/or socio-economic benefits to the community. This grant is available to citizen volunteer organizations, corporations, landowners, federal, state, tribal agencies, local government, charitable foundations, and youth groups. The grant provides $5,000-$20,000 on average. A $10,000 grant requires in-kind or cash match at 1:1. Each project ideally involves five partners. Apply in March - awards in May. For further information contact John Pai, US EPA, Wetlands Division, 202-260-8076, pai.john@epa.gov. http://www.epa.gov/owow/wetlands/restore/5star/

**U.S. Fish and Wildlife Service:**

- Habitat Conservation - Partners for Fish and Wildlife Program - This program provides expert technical assistance and cost-share incentives to private landowners to restore fish and wildlife habitats. Any privately owned land is potentially eligible. After signing a cooperative agreement with a minimum duration of 10 years, the landowner works one-on-one with a local Service biologist to develop a project plan addressing the goals and objectives of the landowner and the Service to benefit fish and wildlife species on his/her land. The landowner is reimbursed after project completion, based on the cost-sharing formula in the agreement. For further information contact Juliet Barenti, Eastern Washington Coordinator, 11103 East Montgomery #2, Spokane, WA 99206, 509-893-8005, Juliet_Barenti@fws.gov.
- Upper Columbia Fish and Wildlife Office Recovery Program - Recovery grants are available to fund restoration, recovery, assessment, or research projects with an emphasis on well-planned "on-the-ground" projects that restore or enhance fish and wildlife and/or their habitats, benefit federally listed/candidate species and their habitats, or improve listed species numbers. Non-profits and private landowners are eligible. There is no match requirement; however, projects with some cost share or in-kind support may be prioritized. Proposals are accepted near the beginning of each fiscal year for restoration or recovery projects to be funded during that fiscal year. For further information contact Suzanne Audet at (509) 893-8002, Juliet Barenti at 509-893-8005, or Greg Van Stralen at 509-665-3508 ext. 20, or by email at: suzanne_audet@fws.gov, juliet_barenti@fws.gov, or greg_vanstralen@fws.gov.

**Washington State Department of Ecology:**

- Centennial Clean Water Fund - Provides funding for activities to reduce non-point pollution, comprehensive planning (sewer, storm water, watershed), and/or construction point source facilities. Available to local governments, tribes, and special purpose districts such as sewer, health, conservation districts. The funding is capped at $250,000 for up to four years and requires a 25 percent match except for construction projects, which require a 50 percent match. Funding is awarded annually. Notice and workshops occur in December and January. Applications are due late February. For further information contact Tim Hilliard at Ecology, 360-407-6429, thil461@ecy.wa.gov. http://www.ecy.wa.gov/fap.html.

- Flood Control Assistance Account Program - This statewide financial assistance program funds proposals that can demonstrate a propensity for preservation, restoration, or enhancement of Endangered Species Act-listed fishery resources through planning or flood damage reduction projects. Any public entity that belongs to the National Flood Insurance Program, including towns, cities, counties, and eligible Native American tribes throughout the state are eligible. Funding is capped at $500,000 per county per biennium and requires a 25-50 percent match, depending on the project. Applications are due in May, with funds available in September. For further information contact Ted Olson at Ecology, 509-329-3413, tols461@ecy.wa.gov.
- Non-point Source Implementation Grant (319) Program - This fund provides grants to local governments, Native American tribes, state agencies, and nonprofit organizations to address identified non-point source pollution and to improve and protect water quality. Grant funds available for each state are determined by an Environmental Protection Agency-developed allocation formula. Grants are awarded annually. For further information contact Helen Bresler at Ecology, 360-407-6180, hbre461@ecy.wa.gov.
- Watershed Planning Grant Program – This program provides funds for the organizational, assessment, and planning phases of watershed related projects. The program requires a 10 percent match for Phase 4 watershed planning implementation. Eligible candidates include government agencies or tribes who wish to apply for grant funds for watershed related projects. To be eligible for Phase 4 funding, the Watershed Plan must have received approval from the planning unit and the county government(s). Grant amounts vary depending on which phase of planning is to be funded and whether projects involve one or more than one Water Resource Inventory Area (WRIA). Grants are funded on a fiscal year basis. Applications are due in June and awards are announced in July. For further information contact Cathy Hubbard, Grants Administrator, at Ecology, 360-407-6491, cahu461@ecy.wa.gov.
- Washington Coastal Protection Fund – Terry Husseman Water Quality Account - This account is used to fund environmental, recreational, and aesthetic restoration and enhancement projects. Funding is available to local governments, tribes, watershed planning units, nonprofits, and state agencies. Priority is given to projects that involve partnerships with local resources/volunteers. Requires Ecology partner. Total available funding is $200,000 for all projects. Match not required but given points. Applications are accepted year-round. For further information contact Melissa Gildersleeve, Watershed Coordinator, 360-407-6548, mgil461@ecy.wa.gov.

**Washington State Recreation and Conservation Office:**

- Aquatic Lands Enhancement Account (ALEA) - This grant supports the purchase, improvement, or protection of aquatic lands for public purposes, including improved accessibility. The grant is available to local governments, state agencies, and tribes. Applicants must provide at least 50 percent in matching resources. Projects must be consistent with the local shoreline master program and must be located on lands adjoining a water body that meets the definition of "navigable." For further information contact Kim Sellers, Outdoor Grant Manager, 360-902-3082, kims@rco.wa.gov.

**Washington State Department of Natural Resources:**

- Restoration Funding Program – The DNR funds projects associated with its aquatic lands lease program. Funding typically comes from the ALEA, as described above under the Washington State Recreation and Conservation Office. Under the ALEA, the DNR is instructed to ensure that revenue generated from state-owned aquatic land leases goes back to helping restore aquatic environments. For further information contact Monica Shoemaker at 206-799-2949, monica.shoemaker@dnr.wa.gov.

**Recreational Equipment Incorporated (REI):**

- Stewardship Grants - Every year, REI gives 3 percent of its previous year's operating profit to organizations that employees have identified as important players in local conservation activities. In 2010, the company gave $3.7 million in grants to more than 330 groups across the country.

## 6.3 TIMELINE AND BENCHMARKS FOR IMPLEMENTING RESTORATION PLAN

Restoration plans involve long-term goals and efforts with restoration projects generally occurring as funding becomes available, or as required through a permit action. As per WAC 173-26-201(c), master programs must "include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area." To facilitate this policy, the following steps describe a process for implementing this plan.

The first step will be to task a member of the town's government with the role of being the city's shoreline restoration liaison. This person will create a central shoreline restoration file location and there place all documents associated with efforts to coordinate, implement, or otherwise support shoreline restoration activities.

Once familiar with the goals, policies, and opportunities contained in this plan, this person would begin outreach activities. Outreach is expected to be a minimal time commitment and is likely to include a few discussions with local landowners and local conservation agencies (NRCS and SCD). If landowners express an interest in shoreline conservation or restoration, the restoration liaison can help put them in touch with conservation agencies and associated restoration incentives.

All of the shoreline properties within the town of Latah are private. As such, the restoration liaison should determine whether or not landowners are open to allowing access for volunteer planting efforts. If access is an option, the liaison may contact conservation organizations and volunteer groups to see if there is interest and/or grant funding available for shoreline planting projects.

Benchmarks associated with this plan include the following:

- Assign the task of shoreline restoration liaison and create a central file to track restoration activities by 2016.
- Contact local conservation agencies, local landowners, and volunteer organizations to determine interest and availability of resources for restoration opportunities by 2017.
- Document all restoration activities by December 31 each year.

## 7.1 MONITORING PLAN

All of the site-specific restoration activities described in this plan are similar in nature. Due to this fact, it is especially important to monitor the success of individual restoration activities so that subsequent restoration projects can be modified based on the particular successes and failures of each completed project. When applying for restoration project funding, Latah and partners should include funding for follow up monitoring in the funding application. Monitoring data can be used to direct maintenance activities and demonstrate that Latah is following through on the grant-funded projects. In addition, it can ensure grantors that future grant-funded restoration projects will have the benefit of lessons learned from past projects.

The U.S. Army Corps of Engineers Ecosystem Management and Restoration Research Program provides the following description of the process for implementing monitoring for riparian restoration projects:

> The general process for implementing riparian restoration and monitoring is outlined in five basic steps. These include: (1) setting goals and objectives, (2) developing a monitoring protocol, (3) designing and implementing data collection, (4) analyzing and interpreting monitoring data, and (5) assessing restoration efforts.

This process is helpful for monitoring all shoreline projects described by this plan. Additional detail for each of the five steps is provided in the literature (Guilfoyle and Fischer 2006). Generally speaking, monitoring is recommended over a five-year period when attempting to determine the performance of a shoreline restoration project relative to its state objectives and/or permit conditions.

## 7.2 MAINTENANCE

Maintenance responsibilities will depend on the specific project and the dynamics of the partnership between Latah and its restoration partner(s). Maintenance is an important aspect of project completion. Specific maintenance activities will depend on site conditions and monitoring results. For example, restoration projects proposed at sites with identified noxious vegetation will need to maintain weed population reductions.

# REFERENCES


Covich et. al. 1999. The Role of Benthic Invertebrate Species in Freshwater Ecosystems. Bioscience. Vol. 49, No. 2. February 1999.

Ecology. 2005. Draft Cleanup Action Plan, Spokane River Upriver Dam PCB Site, Spokane, WA. Toxics Cleanup Program, Eastern Regional Office. Spokane, Washington.

Ecology. 2010a. Shoreline Master Program Handbook. Ecology Publication #11-06-010. Lacey, Washington.

GEI Consultants Inc. 2004. Intermountain Province Subbasin Plan. Prepared for the Northwest Power and Conservation Council. Spokane, Washington.

Guilfoyle and Fischer. 2006. Guidelines for establishing monitoring programs to assess the success of riparian restoration efforts in arid and semi-arid landscapes. U.S. Army Corps of Engineers Ecosystem Management and Restoration Research Program. Technical Note ERDC TN-EMRRP-SR-50.

Hoag, C. and J. Fripp (Prepared by), for Natural Resources Conservation Service (NRCS). 2002. Streambank Soil Bioengineering Field Guide for Low Precipitation Areas. USDA NRCS Plant Material Center, Aberdeen, Idaho.

Landau Associates. 2005. Spokane County Shorelines Master Program Update. Spokane County, Washington. February 1, 2005. Spokane, Washington.

SCD (Spokane Conservation District). 2005. Spokane County Proper Functioning Condition Stream Inventory & Assessment. Spokane, Washington.

SCD. 2013. Water Resources Projects in the Hangman Creek Watershed. Accessed April 11, 2013 from http://www.sccd.org/hangmancreekwatershed.html.

URS (URS Corporation). 2010. City of Spokane Valley Shoreline Master Program Update, Shoreline Inventory and Characterization Report. Spokane Valley, Washington.

URS. 2012. Shoreline Inventory and Characterization Summary Report, Towns of Latah, Waverly, and Rockford. Spokane County, Washington.

Webster. 2007. New Millennium™ Dictionary of English, Preview Edition (v 0.9.7) Copyright © 2003-2007 Lexico Publishing Group, LLC.